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Angew. Chem. Int. Ed. 2012, 51, **2**
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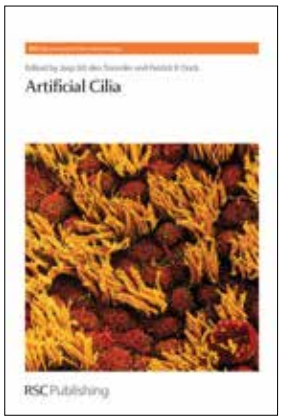

Artificial Cilia

Edited by **Jaap den Toonder**, Philips Research, Netherlands | **Patrick R Onck**, University of Groningen, Netherlands

This book gives an overview of the research field of artificial cilia, a novel technology for controlling fluid flow at microscopic scales. This field is inspired by nature, namely by naturally occurring cilia which are tiny hairs covering biological cells and that have been used already for over a billion years by nature to generate and sense fluid flow. The research field started less than a decade ago and has grown fast in recent years, since it offers very interesting options for flow control in lab-on-a-chip devices.

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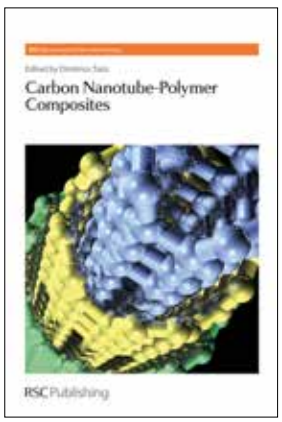

Carbon Nanotube-Polymer Composites

Edited by **Dimitrios Tasis**, University of Patras, Greece

The purpose of this book is to summarize the basic chemical aspects for obtaining multifunctional carbon nanotube-based polymer composites, and to highlight some of the most remarkable advances that occurred in the field during the last recent years. The rapid advances in carbon nanotube chemistry have moved towards the creation of functional systems with increased attention to potential applications. Chemically modified CNTs have shown a wide range of physical and chemical properties that have made them attractive for the preparation of super-strong/conductive polymer composite films/fibers, actuators, sensors etc. Contributions from the world's leading scientists in the field make this a highly multidisciplinary, comprehensive reference work suitable for postgraduates and professional researchers in academia and industry.

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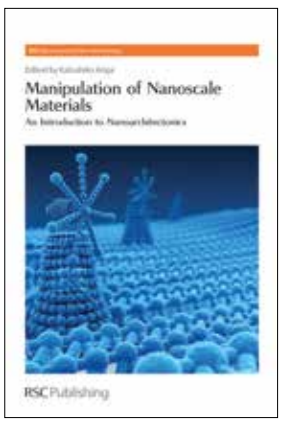

Manipulation of Nanoscale Materials

An Introduction to Nanoarchitectonics

Edited by **Katsuhiko Ariga**, National Institute for Materials Science, Japan

The techniques involved in producing nanomaterials have developed rapidly but the methods needed to make them into functional materials have not kept pace. Materials nanoarchitechtonics will play a vital role in resolving this issue, thus ensuring that nanostructures fulfill their potential in real applications. Written by top researchers, this book is divided into four sections. It starts with the origin and future of nanoarchitechtonics before going on to describe the general concepts and practical uses. The next section, on bio-conjugates and bio-applications, touches on syntheses, drug delivery, safety, separation, biocatalysis, and bio-sensing. The final section covers advanced applications in photovoltaics, magnetic junctions, probe lithography, cantilever devices, and molecular logic gates.

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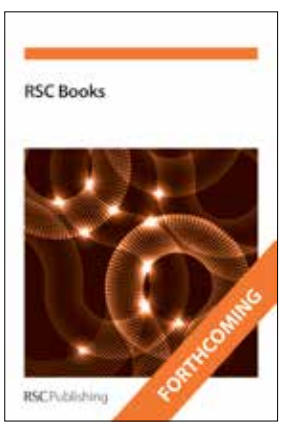

Nanodiamond

Edited by **Oliver A Williams**, Cardiff University, UK

The exceptional mechanical, optical and surface properties of nanodiamond along with its biocompatibility have gained it much interest for a large range of applications. Exhibiting the outstanding bulk diamond properties at the nanoscale in the form of a film or small particle makes it an inexpensive alternative for many applications. Nanodiamond is the first comprehensive book on the field of nanodiamonds and the book reviews the state-of-the-art of nanodiamond films and particles covering the fundamentals of growth, purification and spectroscopy and some of its diverse applications such as MEMS, drug delivery and biomarkers and biosensing. Edited by a leading expert in nanodiamonds, this is the perfect resource for those new to, and active in, nanodiamond research and those interested in its applications.

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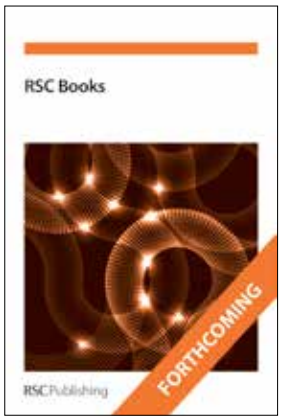

Nanoscience for the Conservation of Works of Art

Edited by Piero Baglioni, David Chelazzi, University of Florence, Italy

Techniques based on nanotechnology are replacing traditional treatments. Scientists expanding their activities to conservation need to be acquainted with these advanced conservation methodologies through a suitable theoretical introduction to systems such as nanoparticles, microemulsions and gels. This unique book provides the detailed information necessary to understand and how to produce and use the modern systems for conservation. Numerous case studies will show how to handle these systems. Practitioners in cultural heritage activities and conservation science including scientists and conservators that operate in museums, universities, schools, and other institutions, as well as students, will find this book extremely useful. It also appeal to students in surface/colloid chemistry and nanoscience since it offers interesting practical applications to these fundamental sciences.

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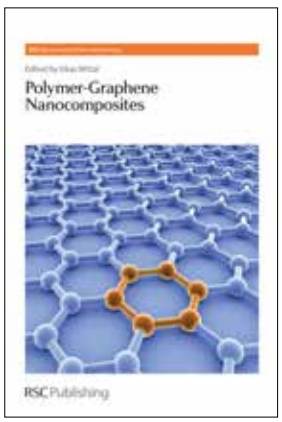

Polymer-Graphene Nanocomposites

Edited by Vikas Mittal, The Pertroleum Institute, United Arab Emirates

This is the first, forward-thinking, publication of its kind to detail the various methodologies of graphene functionalization and subsequent generation of nanocomposites in a comprehensive way. Covering the most recent developments in the generation of graphene nanocomposites synthesis it assimilates, in one place, all the necessary information required to provide the reader with in-depth insights into the various aspects of the subject. The concluding chapter provides a summary on the current status and future challenges associated with the subject. It is a comprehensive handbook providing essential, highly toical, methods and strategies to the researcher. Written by leading scientists in their respective fields, the book will appeal to postgraduates and professional researchers in academia and industry.

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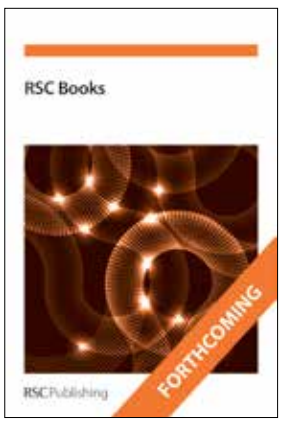

Polymer Nanofibers

Building Blocks for Nanotechnology

Edited by Dario Pisignano, University of Salento, Italy

The progress of research on polymer nanofibers has become especially relevant and rapid in the past couple of years. This book gives a comprehensive presentation of polymer nanofibers, including both the relevant physical aspects of nanofiber formation and of their structural, superficial, optical, electrical and biological properties, and the main technological issues of methods for fabricating nanofibers, with a special focus on electrospinning. The exceptional coverage of applications in different forms, the use of interdisciplinary technical language as well as the "from materials to applications" chapter approach, which is ideal for post-graduate students, means various interest groups including physicists, biologists, biotechnologists and engineers will find it to be an extremely valuable resource.

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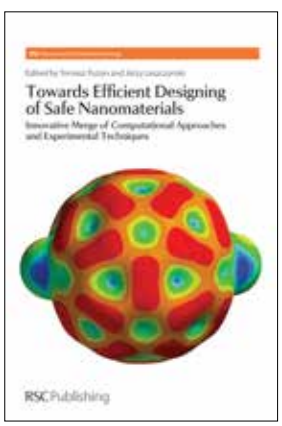

Towards Efficient Designing of Safe Nanomaterials

Innovative Merge of Computational Approaches and Experimental Techniques

Edited by Jerzy Leszczynski, Jackson State University, USA | Tomasz Puzyn, University of Gdansk, Poland

The expanding field of nanotechnology is now one of the most promising areas of science. However, because some nanoparticles can have a negative impact on human health and the environment, the design of novel materials must always be accompanied by a comprehensive risk assessment. Until now, the information on the methods available has been fragmented and incomplete. This book is the first to provide a comprehensive review of recent progress and challenges in the risk assessment of nanomaterials by empirical and computational techniques. Topics covered include: benefits versus risks, carbon based nanomaterials, environmental detection and quantitative analysis, chemometric modelling, human exposure assessment, toxicity testing, nano-QSAR, risk assessment strategies, policy and regulatory frameworks.

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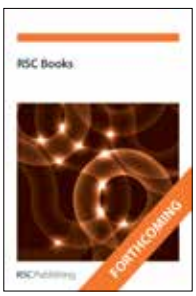

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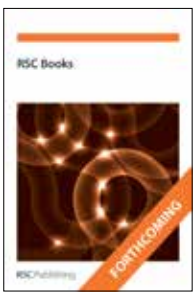

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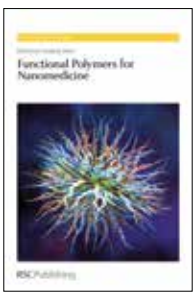

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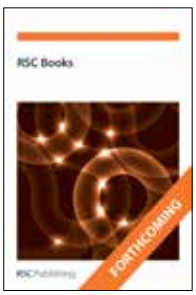

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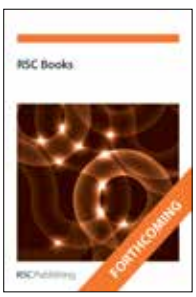

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Edited by Paul O'Brien, University of Manchester, UK

The field of nanoscience continues to grow at an impressive rate, with over 10,000 new articles a year contributing to a literature of more than half a million citations. Such a vast landscape of material requires careful searching to discover the most important discoveries. The newest edition to the Specialist Periodical Reports, presents a digest of the last twelve months of literature across the field. The volume editor, Professor Paul O'Brien (University of Manchester, UK) has drawn on some of the most active researchers to present critical and comprehensive reviews of the hottest topics in the field. Chapters include "Nanomaterials for solar energy", "Magnetic hyperthermia" and "Graphene and graphene-based nanocomposites". There is also a special chapter on "Nanoscience in India". Anyone practicing in any nano-allied field, or wishing to enter the nanoworld will benefit from the comprehensive resource, which will be published annually.

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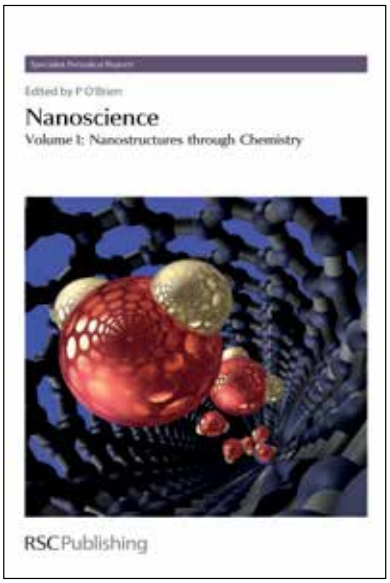

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